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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,006

09/22/2003

Tetsuya Shiozaki

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

NWAONICHA, CHUKWUMA O

ART UNIT

PAPER NUMBER

1621

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/665,006	Applicant(s) SHIOZAKI ET AL.	
	Examiner CHUKWUMA O. NWAONICHA	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Current Status

1. This action is responsive to Applicants' amendment of 11 June 2009.
2. Receipt and entry of Applicants' amendment is acknowledged.
3. Claims 1-5 are pending.
4. The finality of the Office Action dated 12/11/2008 is withdrawn in favor of this rejection.

Applicants argue that their process yield unexpected result. That is, less by-product and higher product yield. Applicants' argument about unexpected results filed 11 June 2009 has been fully considered but they are not persuasive because the compared results were obtained with ratios of 1/0.13 and 0.15 to results with a ratio of 1/0.51. However, the claims encompass a range that extends to 0.3 and further embraces using any acid and basic compound whereas the exemplified results are limited to acetic acid and pyridine. The evidence of unexpected doesn't support the full breadth of the claims because there is no evidence of improvement up to a ratio of 1/0.3 wherein the acidic and basic compounds are other than acetic acid and pyridine, and Applicants failed to provide the result results obtained with ratios of 1/0.3 to results with a ratio of 1/0.51.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which

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it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specifically “a method for producing a 3-methylthiopropenal wherein **acetic acid** and **pyridine** are employ as exemplified in the specification” does not reasonably provide enablement for “a method for producing a 3-methylthiopropenal carried out with **any acidic compound** and **any basic compound**” as claimed because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropenal in a continuous manner with any acidic compound and any basic compound.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The standard for determining whether the specification meets the enablement requirement is whether experimentation needed to practice the invention is undue or unreasonable. Accordingly, even though the forgoing statute does not use the term “undue experimentation,” it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. See M.P.E.P. § 2164.

In the instant case, the claims cover “a method for producing a 3-methylthiopropenal carried out with any acidic compound and any basic compound”, and Applicants have not specified in the claims or in the specification how to conduct a

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method for producing a 3-methylthiopropenal in a continuous manner with all acidic compounds and all basic compounds.

Based on the above standards, the disclosure must contain sufficient information to enable one skilled in the pertinent art to practice this invention without undue experimentation. See M.P.E.P. 2164.01. Given the lack of disclosure for “a method for producing a 3-methylthiopropenal carried out with any acidic compound and any basic compound”, the instant invention cannot be practiced commensurate in scope with the claims because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropenal in a continuous manner with any acidic compound and any basic compound.

The Examiner understands that there is no requirement that the specification disclose every possible embodiment if there is sufficient guidance given by knowledge in the art (See M.P.E.P. § 2164.05(a)). However, the instant case goes beyond what is known in the art, because the specification does not offer any guidance on how one of ordinary skill would go about practicing the invention from the claim to “a method for producing a 3-methylthiopropenal carried out with any acidic compound and any basic compound” because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropenal in a continuous manner with any acidic compound and any basic compound.

Here, the requirement for enablement is not met since the claims go far beyond the enabling disclosure. Based on the forgoing, **claims** 1-5 are *prima facie* non-enabled for their full scope.

With regard to rejection under 35 U. S. C. 112, first paragraph, the following factors have been carefully considered (*In re Wands*, 8 USPQ2d 1400; CAFC, 1988):

1. the nature of the invention,
2. the state of the prior art,
3. the predictability or lack thereof in the art,
4. the amount of direction or guidance present,
5. the presence or absence of working examples,
6. the breadth of the claims,
7. the quantity of experimentation needed, and
8. the level of the skill in the art.

(1) **Nature of the invention.** As indicated above, the invention is drawn to “a method for producing a 3-methylthiopropional wherein acetic acid and pyridine are employ as exemplified in the specification”.

(2) **Breadth of the Claims.** The claims are extremely broad because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropional in a continuous manner with any acidic compound and any basic compound. In particular, **claims** 1-5 that read on specifically “a method for producing a 3-methylthiopropional carried out with any acidic compound and any basic compound”.

(4) **Unpredictability of the Art.** The instant case is drawn to “a method for producing a 3-methylthiopropional carried out with any acidic compound and any basic compound”. This method is speculative because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropional in a continuous manner with any acidic compound and any basic compound. Applicants’ claiming “a method for producing a 3-methylthiopropional carried out with any acidic compound and any basic compound” is doubtful and requires

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objective proof because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropional in a continuous manner with any acidic compound and any basic compound. In such a speculative field, more enablement by way of specific examples is necessary in order to establish the utility of a genus. In re Fisher, 166 U.S.P.Q. 18.

(5) **Amount of Guidance Provided.** Applicants have provided guidance for a method for producing a 3-methylthiopropional wherein acetic acid and pyridine is employ as exemplified in the specification. However, when considering that the claims read on “a method for producing a 3-methylthiopropional carried out with any acidic compound and any basic compound”, it becomes critical to know how to make “3-methylthiopropional with any acidic compound and any basic compound” because Applicants have not specified in the claims or in the specification how to conduct a method for producing a 3-methylthiopropional in a continuous manner with any acidic compound and any basic compound. This is critical to the practice of the invention and therefore should adequately be disclosed.

(7) **Ordinary Skill in the Art.** The ordinary skill artisan would not be able to practice the claimed invention with the current disclosure. It is not clear how to make “3-methylthiopropional with any acidic compound and any basic compound.

Thus, it can safely be concluded that the instant disclosure fails to provide an enabling disclosure for “a method for producing a 3-methylthiopropional in a continuous manner with any acidic compound and any basic compound ” as claimed because Applicants have not specified in the claims or in the specification how to conduct a

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method for producing a 3-methylthiopropenal in a continuous manner with any acidic compound and any basic compound.

The Examiner suggests that Applicants delete all non-enabling subject matters.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al., {US 5,705,675}.

Applicants claim a method for producing a 3-methylthiopropenal in a continuous manner, the method comprising the step of supplying an acrolein and a methyl mercaptan together or sequentially with an acidic compound and a basic compound into a reaction system to react the acrolein with the methyl mercaptan, wherein the basic

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compound is used in an amount of about 0.3 mol or less per mole of the acidic compound; wherein all the other variables are as defined in the claim.

Determination of the scope and content of the prior art (M.P.E.P. §2141.01)

Blackburn et al. teach a process for the continuous preparation of 3-(methylthio)propanal. The reaction between acrolein and methyl mercaptan may be conducted in either a continuous or batchwise fashion. Blackburn et al. teach a process wherein the base is in excess of the acid; that is; the molar ratio of organic base to acetic acid introduced into the reaction zone is typically from about 0.5 to about 2.0. More preferably, the molar ratio organic base to acetic acid introduced into the reaction zone is from about 0.5 to about 1.0. Furthermore, Blackburn et al. teach the process wherein the catalysts are premix before introduction into the reaction zone. See column 3, line 36-38, column 6, lines 2-38 and the working example 1.

Ascertainment of the difference between the prior art and the claims (M.P.E.P.. §2141.02)

Blackburn et al. process for producing a 3-methylthiopropional differs from the instantly claimed method for producing a 3-methylthiopropional in that Blackburn et al. teach a process that employed the molar ratio of organic base to acetic acid introduced into the reaction zone is typically from about 0.5 to about 2.0 while applicants claim a process wherein the molar ratio of the basic compound is in an amount of about 0.3 mol or less per mole of the acidic compound.

Finding of prima facie obviousness--rational and motivation (M.P.E.P.. §2142-2143)

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The instant claimed method for producing a 3-methylthiopropional would therefore have been suggested to one of ordinary skill in view of the teachings of Blackburn et al.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by reacting an acrolein and a methyl mercaptan with a basic/acidic compounds by varying the base/acid concentration to avoid the polymerization and formation of by-product from the teaching of Blackburn et al. Said person would have been motivated to make 3-methylthiopropional because 3-methylthiopropional is an essential compound in amino acid synthesis, which is used as a supplement in animal feed formulations.

Additionally, merely modifying the process conditions such as temperature and concentration is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U. S. P. Q. 233 (C. C. P. A. 1955). The instantly claimed invention would therefore have been obvious to one of ordinary skill in the art. It should be noted that a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one of ordinary skill in the art would have expected them to have the same properties. See MPEP 2144.05.

No Claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chukwuma O. Nwaonicha/
Examiner, Art Unit 1621

/Daniel M Sullivan/
Supervisory Patent Examiner, Art Unit 1621